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CAN BOEING STAY PROFITABLE?

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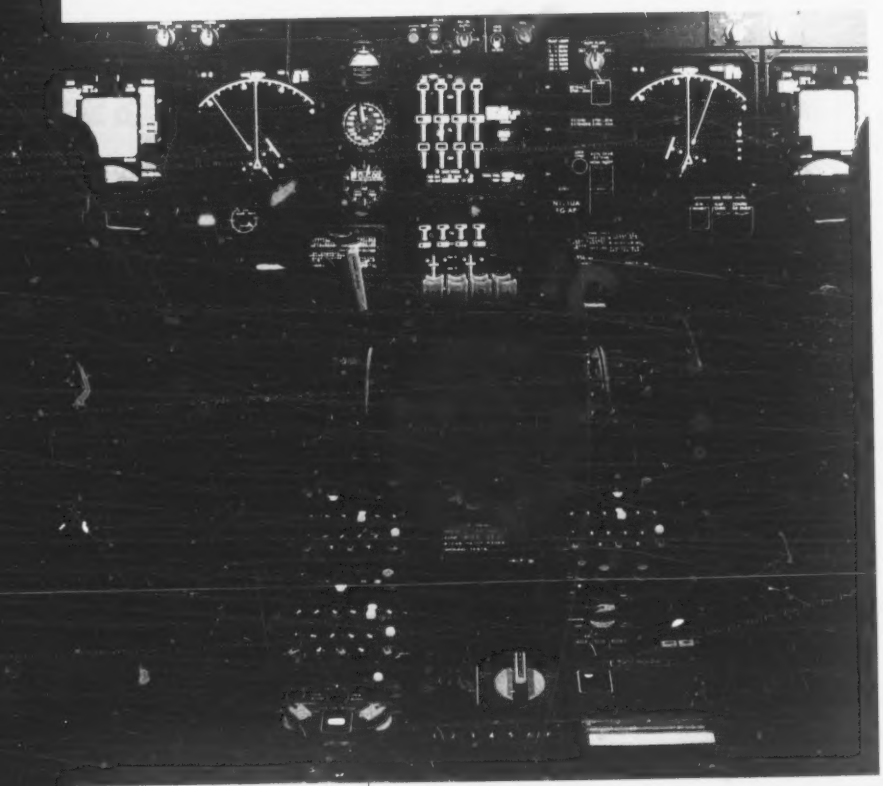

ABOVE: The flight deck of a Boeing 747, photographed by Louis Psihoyos—Matrix.

COVER: Psihoyos shot Chairman Frank Shrontz and a new 747-400 aircraft at Boeing's headquarters in Seattle.

"By all rights over the next decade or so Boeing will grab more new business than anyone else."
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MANAGING/Cover Story

BOEING'S HAPPY, HARROWING TIMES 40

The boom in airplane orders that began in the mid-1980s has gone hypersonic. Nobody stands to profit more than Boeing, the world's No. 1 planemaker, which has dominated the jet age since it introduced the famous 707 back in 1958. But to take advantage of the bonanza, the company must untangle production snarls, do battle with increasingly fierce competition, and decide whether to bet billions on a completely new airliner. *by Anthony Ramirez*

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"The willingness to gamble, whether in product innovation or product introduction, is very important."

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"After two years of window-shopping, women began buying again last fall."

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"Most professors of finance can't hold an intelligent conversation with a vice president of finance."

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"Be ready to deal quietly behind the scenes with him and those he picks for counsel—and for horseshoes."

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"After 21 straight years of sales increases, we learned humility."

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"The fact that her investment is backing glasnost is encouraging."

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EDITOR'S DESK

Ed Faltermayer takes a breather in New York's Central Park.

EDITOR Edmund K. Faltermayer has been digging up dirt on the environment since the early Sixties, when he joined FORTUNE after a career that had taken him to West Germany as a correspondent for the *Wall Street Journal*. Having grown accustomed to the clean streams and neatly manicured parks of Europe, Faltermayer was appalled by the filthy air and garbage-strewn subways he found upon returning to New York City. He gave vent to his outrage in a series of six FORTUNE articles emphasizing the need to clean up the environment. One of them, "We Can Afford Clean Air," was the first in a major business publication to call upon industrial polluters to clean up their act. His series grew into a book, *Redoing America*, published in 1968.

With the passage of the Clean Air Act in 1970, Faltermayer saw his journalistic efforts rewarded. While he downplays the effect his stories had on Capitol Hill, he admits that it was gratifying to help draw attention to such a critical issue. "I called for cleaner air, and it got done," he says. "It was soapbox journalism, in the Time Inc. tradition." Since then, he has remained on his soapbox, writing articles in the Seventies presaging the energy crisis and assessing the benefits of nuclear power, and later editing a number of pieces on the environment, including FORTUNE's recent cover story on the Alaskan oil spill.

Edmund Faltermayer's latest provocative article, "Air: How Clean Is Clean Enough?" appears in this issue on page 54. Breaking from the popular, if apocalyptic, view that air pollution is reaching crisis proportions, Faltermayer raises a tough question: Can the nation afford to spend up to an additional $19 billion a year on cleaner air—as George Bush now proposes to do—when it has so many other serious ills to cure? Americans already spend $34 billion annually to curb pollution, he notes, with the result that air quality has improved significantly over the past ten years.

In search of an answer, Faltermayer interviewed 40 environmentalists, health care researchers, economists, and businessmen, and visited some of the smoggiest cities in the land, from Newark, New Jersey, to Los Angeles. He also spent considerable time analyzing the most serious studies that have been done on the health effects of dirty air.

Faltermayer, who is more sanguine today about the future of the ecosystem than he was in the Sixties and Seventies, does support some acceleration of the cleanup. "Polluted air is not a crisis like crack in the South Bronx, but on the other hand, it *is* the stuff we breathe," he says. "You can avoid going to the South Bronx. You can't avoid breathing." After reading Faltermayer's clearsighted analysis of the problem and his suggestions on what to do about it, you may just breathe a little easier.

Marshall Loeb
MANAGING EDITOR

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BOEING'S HAPPY, HARROWING TIMES

Swamped with orders, the world's No. 1 planemaker has to unsnarl production, beat back rivals, and decide whether to bet billions on a completely new plane.

■ *by Anthony Ramirez*

AIRLINES the world over are in a shopping frenzy, scrambling to buy enough planes to haul the hordes of customers besieging their gates. In the U.S. deregulation has meant fare cuts that continue to cram virtually every available airliner chockablock with passengers. In Europe the already crowded airways will get busier still after 1992, when barriers to international competition fall. In Asia the powerhouse economies of the Pacific Rim are producing the highest air travel growth rates anywhere. Worldwide, more than a billion passengers clambered aboard commercial airliners last year—and the annual load could nearly double by 2000.

A shiny new United 747-400—delivered four months late

Because of all this demand, the boom in airplane orders that began in the mid-1980s has now gone hypersonic. Bookings totaled nearly 3,200 planes between 1985 and 1988, easily breaking the record set just before jumbo jets arrived in the late 1960s. At Boeing, the industry leader since its famous 707 opened the jet age in 1958, the backlog of orders jumped 70% from 1984 to 1987—and then surged another 70% in 1988 alone. Boeing's orders in the first half of 1989 equal all of last year's. Right now the industry as a whole has a backlog of 3,500. Boeing economists look for airlines to buy more than 8,400 new aircraft worth over $500 billion during the next 15 years.

So far, awesome Boeing has dominated the jet era like a 747 looming over a Piper Cub. The biggest aircraft manufacturer in the world and America's No. 3 exporter (after GM and Ford; see Trade), the company has built more than 60% of the commercial jets now flying. It makes the best-selling small jet, the best-selling medium-size jet, and the only jumbo jet. For customers from American Airlines to Air Zimbabwe, it has orders right now for more than $80 billion in planes—and by all rights over the next decade or so it will grab more new business than anyone else.

CAN BOEING manage this bonanza? Sure, it's a seller's market, but because no single company can meet the exploding demand, the order books of competitors—McDonnell Douglas at home and the Airbus Industrie consortium abroad—are bulging just as bountifully as Boeing's. Airbus in particular is a mounting threat. Its technologically advanced and fuel-efficient product line will soon match Boeing's nose to nose across the tarmac (see chart), and heavy subsidies from the British, French, and West German governments let it grab market share by discounting prices. McDonnell Douglas nearly bankrupted itself in a high-stakes dogfight between its DC-10 and Lockheed's L-1011 that drove Lockheed out of the airliner business in 1984. "Mack Dack," as it's known in the industry, remains hobbled today by a ruthless restructuring and by production problems. But if the company can get its act together, a projected "stretch" version of its MD11 airframe could challenge Boeing's huge 747.

Boeing has internal problems as well. Paradoxically, Airbus has a more experienced work force, thanks to both the European aversion to layoffs and Boeing's own roller-coaster fortunes, which compelled it to unload 20,000 workers—one fifth of its employees—when high oil prices, a recession, and uncertainty about deregulation stalled business in the early 1980s. Boeing's reputation for quality and on-time delivery has suffered in consequence. The newest 747-400 jumbos are now six months behind schedule, the first time in 20 years that the company has been late with deliveries. Other Boeing models have had troubles as well, notably with miswired fire-control systems. Besides a rookie work force, the gremlins include an ambitious production schedule that depended on the pinpoint delivery of parts. In the meantime, Boeing's restive customers tap their feet and fume.

As the biggest planemaker, Boeing is also the most vulnerable to the industry's enormously volatile business cycle, which consists of feast, famine, and a lot of fingernail chewing in between. Airlines tend to buy new planes in blocks, while passenger demand grows only gradually; as in real estate, most of the time there's either too much capacity or too little. Between bursts of orders planemakers can only bide their time, idling factories and much of their work force.

The 747-400's redesigned flight deck is a hit with airlines—and pilots. This "glass cockpit" replaces more than 600 lights, gauges, dials, and switches with nine easy-to-read computer displays and other graphics. The two screens at center, for example, alert the crew to anything abnormal in the aircraft's intricate systems.

REPORTER'S ASSOCIATE *Alan Deutschman*

To maintain its role as No. 1, Boeing regularly runs another gut-wrenching risk. It's an industry truism that because of the huge capital investment involved, in effect you bet the company every time you bring out a major new design. Boeing has to keep doing just that to stay in front of the competition. The company's production glitches have delayed the launch of a new airframe that Boeing thinks it needs to keep its edge. The 767-X, as it is called, would most likely be a long-range plane, at 350 seats somewhat smaller than most 747s.

Given the order glut, Richard Shevell, a Stanford aeronautics professor and former Douglas Aircraft executive, says that the dilemma for Boeing and its industry is "how to expand to meet this huge production challenge without risking bankruptcy." Observes Frank Shrontz, Boeing's 57-year-old chairman: "Everybody says 'Isn't it great to have such a huge backlog,' and the answer is yes, considering the alternative." But the world economy could weaken badly, leading airlines to cancel their orders. Conversely, if the boom strengthens even more, jetmakers may find themselves snarled in production nightmares, unable to catch up with demand and perhaps losing money because of manufacturing inefficiencies. "The euphoria that goes along with big order announcements makes for an awfully rosy picture," Shrontz says. "But the rosy picture isn't guaranteed."

IN TACKLING the problems of prosperity, Frank Shrontz can call on 27 years of experience at the company, most of it in the commercial airplane business. After graduating from law school at Idaho and business school at Harvard, Shrontz took his first job at Boeing negotiating sales contracts with airlines. In 1973 he left the company's Seattle headquarters for the Pentagon, first as an assistant secretary of the Air Force and then as an assistant secretary of defense. He returned to Boeing in 1977 as vice president for planning and contracts and rose to become general manager of the division that makes the small, mid-range 737.

When orders fell and the 737 faced cancellation during the energy crisis of the late 1970s, Shrontz championed his plane over the more fuel-efficient and longer-range 757 and 767. Once oil prices collapsed and deregulation encouraged the short-hop flights the 737 was designed for, it became Boeing's biggest seller. In 1984 Shrontz was rewarded with the presidency of Boeing Commercial Airplane Co. He became president of the whole company in 1985, CEO in 1986, and chairman last year.

It is a measure of Shrontz's ability to get along with his colleagues that none of his rivals for CEO quit. His predecessor, Thornton (known simply as "T") Wilson, was a blunt, shoot-from-the-hip engineer known for such "Wilsonisms" as "He's got us by the ying-yang." Shrontz isn't half as colorful. Almost diffident, he is more likely to favor words like "interface" and depends on wide consultation with other senior officers. Says Dean Thornton, Shrontz's successor as president of the commercial airplane company: "Frank's just a quiet kid from Idaho. But for some reason when he's around, a problem gets solved and nobody quite knows how." Irving Shapiro, retired chairman of Du Pont and a former Boeing director, once described Shrontz as hardly "the movie image of a CEO," but "all business and tough-minded."

To deal with the problems created by in-

AN INCREASINGLY SCRAPPY AIRBUS PREPARES TO GO NOSE TO NOSE WITH BOEING

Nobody yet matches Boeing's fleet across the board, but Europe's growing Airbus consortium has models in the works—the A330 and A340—or on the drawing boards that could do just that by the early 1990s. The three other companies are essentially niche players.

	BOEING	MCDONNELL DOUGLAS	BRITISH AEROSPACE	AIRBUS
SHORT RANGE (up to 1,500 nautical miles)				
60-135 seats			BAe146	
MEDIUM RANGE (1,500-3,500 nautical miles)				
Up to 175 seats	737	MD80		
176-225 seats	767			
LONG RANGE (over 3,500 nautical miles)				
Up to 225 seats	757, 767			
226-310 seats	767			
311-475 seats	747, 767-X*	MD11, MD11 Stretch*		

*Projected.

BOEING DOMINATES THE SKIES

*Percent of total dollar value of delivered commercial airliners.
SOURCE: DEAN WITTER REYNOLDS

experienced workers and an overambitious production schedule, Shrontz and his colleagues have devised both short-term and long-term strategies. In the long run, Boeing executives figure time is on their side. They will raise production rates steadily but gingerly in order to give workers a chance to learn their jobs and do them better. Says Philip Condit, executive vice president of the commercial airplane division: "We just want people to settle down."

In the short run, Boeing has imported experienced workers from Lockheed and from other Boeing divisions to meet contractual obligations to deliver 57 of its 747s this year. At the plant in Everett, Washington, where Boeing assembles the planes, nearly 60% of the workers have less than two years' experience. Condit admits that Boeing tried to do too much too fast, with too few seasoned workers. First, the new model extended the range of the standard 747 from about 6,000 miles to nearly 8,000 miles. That required slightly more powerful engines. To maximize the choices available to customers, the company decided to offer engines from all three major manufacturers, Pratt & Whitney, General Electric, and Rolls-Royce. Getting one engine certified by the Federal Aviation Administration, let alone three, is time consuming, and it was not until June 8 that Boeing won the go-ahead for all the power plants.

The flight deck of the 747-400 is different as well, incorporating the latest avionics in a "glass cockpit" that replaces more than 600 lights, dials, gauges, and switches with easy-to-read computer screens and other graphics. The change allows airlines to use two people in the cockpit instead of three, reducing labor costs, but it required miles of rewiring.

BOEING WAS scheduled to deliver six of the advanced planes by March 1989, but at that point it had turned over only one. The situation got so desperate that Boeing contracted with Lockheed's Georgia operation to "borrow"—at premium pay and generous housing allowances—670 skilled workers averaging ten years of experience who had been laid off when production of the Air Force's C-5B heavy cargo plane ended. Boeing also brought in several hundred people from its military airplane division in Wichita, Kansas, and its helicopter division in Philadelphia.

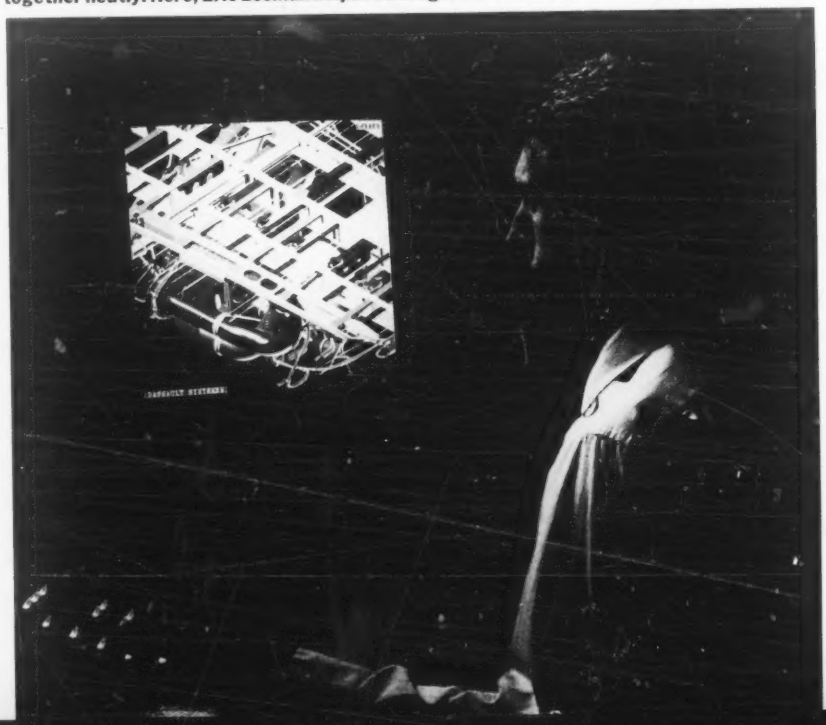
Many of the plane's nearly 3,000 subcontractors were running into snags too. "People have the erroneous view that the whole problem is in the Boeing assembly line, and it's not," insists Dean Thornton. "We buy half of the plane." Boeing assumed that suppliers that performed well in the past would do so again. For example, Jamco, a Japanese manufacturer of lavatories, was critically behind schedule. The lavatories have to go in before the seats, and if the lavatories are late, the plane is late.

The lavatories are a good illustration of what makes building a jetliner so complicated. A 747 has 17 of them, and different configurations mean changes in plumbing, wiring, and floor beams. Since most of Boeing's first 18 customers were foreign airlines that wanted the new 747 as their flagship, each demanded a custom cabin configuration, which slowed work even further. "Northwest, Singapore Airlines, Lufthansa, KLM, British Airways, Cathay Pacific, Korean Air, JAL, Malaysian Airlines, United Airlines—these are big guys," says Condit. Boeing was, in effect, building one-of-a-kind Bentleys with workers who barely knew how to build a Chevrolet. "We didn't marshal our people properly," Thornton concedes.

So far, customers seem satisfied with Boeing's rate of reform. Shrontz has had to spend much time on the road, mollifying angry airline executives who won't have their flagship planes for the peak summer season. What can he say? "I'm honestly telling them how much we regret the delays." Keith Wilkins, planning director for British Airways, one of Boeing's biggest critics on quality control, is satisfied for now: "Boeing has very, very, very big problems, but we believe them when they say they are in the process of correcting them." Says a spokesman for Japan Air Lines, another persistent critic: "We have confidence in them." In June Lufthansa, once skeptical, converted three options for 747-400s into firm orders worth $375 million.

Boeing plans to raise production rates over the next year from about 30 planes of all types per month to 34. Shrontz will watch the 747 line like a nervous mother.

Computer-aided design allows Boeing engineers to make sure that complex systems fit together neatly. Here, Eric Essman helps reconfigure the aft section of a twin-jet 757.



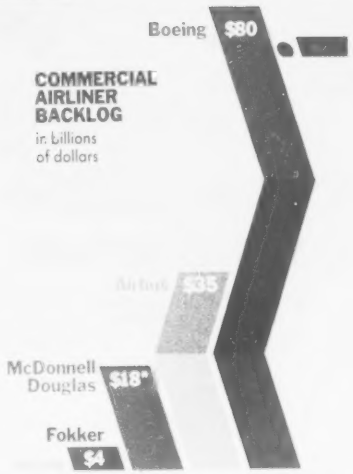
Having turned over only nine of the craft in the first half, Boeing must deliver a staggering 48 planes in the remaining six months to fulfill its contracts. If that means postponing the 767-X, so be it. "What I don't want is to have management attention and resources we need to get the 747-400 job done diverted to a new airplane," says Shrontz. "I want to have some comfort that we're going to get darned close to 57."

Boeing's problems have not been confined to the 747. The FAA found 95 cases of misconnected wiring and plumbing in systems used to detect and put out fires in all versions of Boeing jets—737s, 757s, and 767s, as well as 747s. Japan Air Lines and British Airways were furious with the flaws and wrote Shrontz blistering letters. Boeing corrected all 95 cases, and redesigned the fire-control systems to make the confusing tangles of wires easier to assemble properly.

None of this has helped Boeing's profit margins, which in a brutally price-competitive industry are as frail as a paper airplane. Last year Boeing had earnings of $614 million on revenues of $17 billion; ten years ago it earned nearly as much—$505 million—on less than half the sales ($8.1 billion). Two-thirds of its revenues and 70% of its profits come from building commercial airliners. Shrontz can look for little help from his defense and space-related businesses. Last year the military airplanes division lost $95 million. The V-22 Osprey under joint development with Textron's Bell subsidiary, a vertical takeoff and landing aircraft that flies like a plane and lands like a helicopter, could be worth $26 billion in orders from the Marine Corps—but Congress is likely to cancel it.

Thornton: "We were late. It's our fault."

A SONIC BOOM IN ORDERS



FOR ALL ITS recent difficulties, no one argues that Boeing doesn't know how to make an airplane. Founded by a wealthy timberman's son who liked to fish near Seattle, Boeing honed its prowess during World War II with the renowned B-17 Flying Fortress and the B-29 Superfortress, the biggest bomber of its time. In 1952 Boeing bet the company by boldly gambling $16 million—most of its net worth—on a prototype passenger jet, when the market was dominated by Douglas Aircraft's propeller-driven DC ("Douglas Commercial") series. The resulting Boeing 707 made propeller planes obsolete.

Boeing excels in product support. To advise its customers, the company stations a network of 198 field representatives in 109 cities in 55 countries. At seven major parts centers in such capitals as Brussels and Singapore, Boeing keeps 15 million spare parts in inventory. On average, it ships one part every 45 seconds. Airbus and McDonnell Douglas can't match that coverage.

If a plane crashes but can be repaired, Boeing dispatches a crack team of "aircraft on the ground" engineers to fix it. Once called "Reagan's Raiders" after the late Robert Reagan, who organized the group in 1960, the 80-man division has worked on everything from a 737 riddled by bullets in the Yom Kippur War to an Air France cargo 747 that gave "Delhi belly" a new meaning after an aborted takeoff sheared off its wheels in the Indian capital last year. Work on rebuilding the Air France plane began in May; over four months, Boeing will custom-make huge replacement fuselage sections, put them on ships to India, and then truck them inland to New Delhi, where it has set up a minifactory under a gigantic white tent. The 100-degree-plus heat is so intense that Boeing engineers can work on the wings only at night because they expand so much during the day.

Boeing's chief competitor, Airbus, sold few planes before the early 1980s. Its production was small but stable. With the current boom, it can afford to step up production from 61 planes last year to 108 in 1989. Its backlog now totals an impressive $35 billion. Airbus is heavily inoculated by subsidies against the industry's feast-or-famine disease. The U.S. Commerce Department estimates that European governments provided one-fourth of Airbus Industrie's cash flow of $35 billion to $40 billion between 1974 and 1987. Airbus doesn't discuss its numbers but predicts profitability by 1995—something Commerce says is highly unlikely.

AIRBUS'S PRODUCT line is wide and attractive. The company currently builds three medium- to long-range planes that carry 150 to 267 passengers. Airbus has adopted "fly-by-wire," a computerized steering system that is lighter, faster, and easier to use than decades-old stick-and-rudder hydraulics. In the early 1990s Airbus plans to introduce two larger planes, the four-engine, 295-passenger A340 at $95 million and the twin-engine, 335-passenger A330 at $89.5 million. The A330 will compete directly with Boeing's 767-X and will probably beat it to the marketplace by two years.

In April the European governments that back Airbus forced a little-noticed reorganization that may indicate a new reluctance to dig much further into their deep pockets: They cut the unwieldy Airbus supervisory board from 17 members to five and created the post of financial director, suggesting a strong desire for a tighter rein on costs.

A much more turbulent reorganization is under way at McDonnell Douglas, where the No. 3 planemaker is trying to reduce nine layers of management to five. In the process, 4,000 executives will be pared to 2,700. One of the more demoralizing aspects of the reorganization: a requirement that executives "apply" again for their jobs. The parent company in St. Louis used the shock therapy on the aircraft company in Long Beach, California, because of severe production delays. In February planes were

averaging 304 "open items"—jobs not completed when they should have been. In June the count was still about 100.

Mack Dack shocked Wall Street with a $66 million operating loss on its commercial aircraft operations in the first quarter. The company made 120 planes last year, but it will be hard pressed to turn out the same number in 1989. John Wolf, vice president and general manager of the MD-80 program, is well aware that McDonnell took over Douglas in 1967 when the airliner company was unable to handle a huge order backlog. "We want to avoid a similar situation today," says Wolf.

Frustrated by the disastrous competition with Lockheed, McDonnell hasn't financed an all-new plane since it acquired Douglas: The MD80 is a retooled DC-9, the MD11 a revamped DC-10. McDonnell Douglas has successfully exploited price to keep Boeing on its toes. The MD80, rival of the $31 million 737, goes for $25 million. The $100 million MD11 competes with some models of the 747, at $120 million or so.

With McDonnell Douglas still weak and Airbus still losing money, Boeing enjoys tremendous advantages. If it launches the 767-X, as seems likely, it will have a plane that it can successfully market in the mid-1990s, when Boeing economists predict a shift in airline demand to much bigger planes. Half the dollar value of aircraft delivered after 1995 may be for planes with more than 350 seats. If airports around the country and the world are helplessly snarled, that may also mean a boom in production of the 747, which can carry nearly 500 passengers, or perhaps a derivative with 100 or more added seats.

Boeing doesn't lack for money. It has about $4 billion in cash and little debt. Jerry Cantwell, an analyst at the Wertheim Schroder brokerage firm, expects price increases of 7% annually on delivered aircraft between 1988 and 1991. As novice workers learn their jobs, he says, profitability on the 747-400 should rise dramatically.

All that cash will come in handy as the 767-X tests Boeing's limits once again. The plane will probably cost around $2.5 billion to develop. Two versions are possible: A "stretch" 767 would be only about 25% new. A second ("the solution we favor," says Thornton, the commercial airplanes president) would be nearly all new, with only a nose section and a few other parts shared with the 767. This version would be a 350-seat plane, with a range of up to 6,000 miles. While airlines will want large planes, they don't want to risk flying half-full 747s. The 767-Xs would be ideal for long, thinly traveled routes like Raleigh-Durham to London's Gatwick airport. Security analysts say likely launch customers are United Airlines and All Nippon Airways of Japan.

The fact that it figures to be an all-new plane makes Wall Street nervous. On June 5, Boeing stock dropped nearly $3.50 a share on the false rumor that Boeing would announce the launch of the 767-X at the Paris air show later in the week. It recovered somewhat two days later, to $77.50. (That's equivalent to $52 after a three-for-two stock split June 9.) Cantwell probably contributed to the June 5 drop by changing his opinion of Boeing stock from "buy" to "neutral." But he changed his mind not because of the 767-X but because he believed Boeing shares were fully priced and would turn down as orders leveled off. "The 767-X is not a negative at all," says Cantwell. "It's a good business decision."

FRANK SHRONTZ is prepared for a high-risk future. "You don't succeed in this business by being cautious," he says. "If you don't want to play the game, maybe you ought to go do something else. I don't want to lose that can-do attitude. The willingness to gamble, whether in product innovation or product introduction, is very important. The worst thing for us is to overreact and get so conservative that we try to live off our past accomplishments. Our willingness to look at the 767-X is evidence that we won't do that."

For Shrontz, Douglas Aircraft is an object lesson: "We don't want to get into the position they were in at the beginning of the jet age, when they were complacent about their product line and didn't innovate. They were unwilling to take the risk that somebody else did." That someone else, of course, was Boeing. F

INVESTOR'S SNAPSHOT

BOEING

SALES (latest four quarters)	**$17.3 BILLION**
CHANGE FROM YEAR EARLIER	UP 14.1%
NET PROFIT	**$639.0 MILLION**
CHANGE	UP 28.3%
RETURN ON COMMON STOCKHOLDERS' EQUITY	**11.6%**
FIVE-YEAR AVERAGE	13.8%
STOCK PRICE RANGE (last 12 months)	**$36.00–$55.75**
RECENT SHARE PRICE	**$50.25**
PRICE/EARNINGS MULTIPLE	**18**
TOTAL RETURN TO INVESTORS (12 months to 6/16)	**42.4%**

The world's biggest plane factory, in Everett, Washington, can turn out four 747s a month.

AMERICA'S 50 BIGGEST EXPORTERS

Overseas sales took a record leap in 1988. Compaq Computer had the biggest increase—over 100%. Some once sluggish industries chipped in with big gains too. ■ *by Edward Prewitt*

WHAT A YEAR for exporters! Led by huge individual increases, overseas sales of America's top 50 soared 22% last year, to nearly $97 billion—by far the biggest jump since FORTUNE began compiling the annual ranking in 1980. Fast-growing Compaq Computer, one of seven new companies on the list, led the gainers with a rise of 102%. Companies fell from the list not because their exports decreased—they didn't—but because they failed to grow fast enough. Cummins Engine, No. 43 last year, pushed overseas sales up 17%, to nearly $500 million. Not good enough to make this year's ranking.

General Motors held its customary lead despite a weak 7.6% increase. No. 2 Ford Motor narrowed the gap with slippery-shaped models that are popular in Europe. Ford's exports rose twice as fast as GM's; another year like that and GM will slip from the top spot for the first time since 1982. Much of both companies' trade doesn't go far—they ship body parts and chassis to assembly plants in Canada, which send most of the cars back to the U.S. (To calculate total exports, FORTUNE counts both direct sales to foreign customers and intercompany transfers to non-U.S. operations.)

Chrysler, which sold its European operations in the 1970s to raise cash, opened export offices in five European countries last year. With consumers clamoring for minivans and Jeep Cherokees, shipments were up 42%.

Boeing stands out as the most export-oriented of the bunch. Nearly half its sales came from abroad last year, and close to two-thirds may this year. Foreign air travel has been surging. By mid-June, Boeing had already delivered 86 aircraft to foreign buyers; only 46 jets went to domestic companies. McDonnell Douglas's 7% increase in exports last year was anemic in comparison with Boeing's. The company blames a dip in orders of the F-18 jet fighter. Exports of commercial aircraft rose 54%.

In a year of strong performances, chemicals did best, with fully a fourth of the companies on FORTUNE's list in that business. Among them, Ethyl (No. 49) was the champ in export growth. The company credited higher prices for most products and an increased sales force in the Far East. Bromine, introduced in Asia recently as a flame retardant, sold particularly well there, as did plastic films. Europe also proved a fertile market. Export sales jumped 48%.

The most notable new entries were pharmaceutical makers Abbott Laboratories, Baxter International, and Bayer USA (subsidiary of Bayer AG of West Germany). Their presence reflects the industry's growing international clout, mainly because of lower prices due to the weaker dollar. Only two years ago Merck was the first drug company ever to make the top 50. Aluminum Co. of America (No. 43) returned to the list after a two-year absence. The price of aluminum shot up as worldwide inventories hit their lowest level in a decade. The relatively weak dollar made U.S. smelters the low-cost producers. Alcoa's foreign sales of aluminum ingot and finished and semifinished products increased 75%.

The top U.S. exporters see an even better year in 1989. Foreign competitors, with their stress on market share, still hang tough. But the Americans are relying on increased efficiency from retooled plants and help from a dollar that, despite its recent rebound, remains 33% below its 1985 peak. With the trade deficit still running $105 billion annually, America needs another year that's even better than the last one. F

REPORTER ASSOCIATE *Rosalind Klein Berlin*

Parts from the U.S. flowing into this assembly plant in Scotland boosted Compaq's exports.

RANK 1988	RANK 1987	COMPANY	PRODUCTS	EXPORT SALES $ Millions	EXPORT SALES Percent change 1987-88	TOTAL SALES $ Millions	TOTAL SALES Fortune 500 Rank	EXPORTS AS PERCENT OF SALES Percent	EXPORTS AS PERCENT OF SALES Rank
1	1	**GENERAL MOTORS** Detroit	Motor vehicles and parts	9,392.0	7.6	121,085.4	1	7.8	41
2	2	**FORD MOTOR** Dearborn, Mich.	Motor vehicles and parts	8,822.0	15.9	92,445.6	2	9.5	35
3	3	**BOEING** Seattle	Commercial and military aircraft	7,849.0	24.9	16,962.0	19	46.3	1
4	4	**GENERAL ELECTRIC** Fairfield, Conn.	Jet engines, generators, medical systems	5,744.0	19.0	49,414.0	5	11.6	29
5	5	**INT'L BUSINESS MACHINES** Armonk, N.Y.	Computers and related equipment	4,951.0	24.0	59,681.0	4	8.3	39
6	8	**CHRYSLER** Highland Park, Mich.	Motor vehicles and parts	4,343.9	42.3	35,472.7	7	12.2	28
7	6	**E.I. DU PONT DE NEMOURS** Wilmington, Del.	Specialty chemicals, energy products	4,196.0	19.0	32,514.0	9	12.9	26
8	7	**MCDONNELL DOUGLAS** St. Louis	Commercial and military aircraft	3,471.0	7.0	15,072.0	25	23.0	5
9	10	**CATERPILLAR** Peoria, Ill.	Heavy machinery, engines, turbines	2,930.0	33.8	10,435.0	35	28.1	4
10	11	**UNITED TECHNOLOGIES** Hartford	Jet engines, helicopters, cooling equipment	2,848.1	37.5	18,087.8	16	15.8	20
11	9	**EASTMAN KODAK** Rochester, N.Y.	Imaging equipment and supplies	2,301.0	26.0	17,034.0	18	13.5	24
12	12	**DIGITAL EQUIPMENT** Maynard, Mass.	Computers and related equipment	2,083.0	6.2	11,475.4	30	18.2	11
13	14	**HEWLETT-PACKARD** Palo Alto, Calif.	Computers, electronics	2,064.0	29.3	9,831.0	39	21.0	7
14	18	**UNISYS** Blue Bell, Pa.	Computers and related equipment	2,012.9	68.0	9,902.0	38	20.3	8
15	13	**PHILIP MORRIS** New York	Tobacco, beverages, food	1,863.0	9.6	25,860.0	10	7.2	43
16	17	**MOTOROLA** Schaumburg, Ill.	Radio equipment, semiconductors	1,742.0	33.7	8,250.0	52	21.1	6
17	16	**OCCIDENTAL PETROLEUM** Los Angeles	Agricultural products, coal	1,684.0	28.0	19,417.0	14	8.7	37
18	20	**GENERAL DYNAMICS** St. Louis	Tanks, aircraft, missiles, gun systems	1,597.1	0.7	9,551.0	41	16.7	13
19	15	**ALLIED-SIGNAL** Morristown, N.J.	Aircraft and vehicle parts, chemicals	1,464.0	3.4	11,909.0	29	12.3	27
20	19	**WEYERHAEUSER** Tacoma	Wood, pulp, paper, logs, lumber	1,398.0	20.6	10,004.2	37	14.0	23
21	23	**UNION CARBIDE** Danbury, Conn.	Chemicals, plastics	1,388.0	30.4	8,324.0	50	16.7	14
22	24	**RAYTHEON** Lexington, Mass.	Electronic weaponry, aircraft	1,307.0	24.8	8,192.1	53	16.0	18
23	27	**TEXTRON** Providence	Aerospace, consumer goods	1,127.0	26.5	7,111.2	61	15.8	19
24	22	**WESTINGHOUSE ELECTRIC** Pittsburgh	Air traffic and weapons electronics	1,115.0	1.7	12,499.5	27	8.9	36
25	26	**DOW CHEMICAL** Midland, Mich.	Chemicals, plastics, polymer products	1,109.0	13.4	16,682.0	21	6.6	44
26	25	**ARCHER DANIELS MIDLAND** Decatur, Ill.	Protein meals, vegetable oils, flour	1,087.7	10.8	6,798.4	65	16.0	17
27	28	**MONSANTO** St. Louis	Herbicides, chemicals, pharmaceuticals	1,083.0	22.1	8,293.0	51	13.1	25
28	29	**INTERNATIONAL PAPER** Purchase, N.Y.	Pulp, paper, wood products	1,000.0	28.7	9,533.0	42	10.5	33
29	32	**HOECHST CELANESE** Somerville, N.J.	Chemicals, plastics, fibers	967.0	43.9	5,679.0	78	17.0	12
30	21	**EXXON** New York	Petroleum, chemicals	937.0	(17.0)	79,557.0	3	1.2	50
31	35	**INTEL** Santa Clara, Calif.	Microcomputer components	925.6	72.2	2,874.8	150	32.2	2
32	31	**MINNESOTA MINING & MFG.** St. Paul	Industrial, electronic, and health goods	836.0	24.2	10,581.0	34	7.9	40
33	•	**BAYER USA** Pittsburgh	Health goods, chemicals, photographics	700.0	16.7	4,718.5	99	14.8	21
34	41	**LOCKHEED** Calabasas, Calif.	Aircraft, electronics, information systems	686.0	21.6	10,667.0	33	6.4	45
35	44	**PHILLIPS PETROLEUM** Bartlesville, Okla.	Liquefied natural gas, chemicals, plastics	675.0	21.6	11,304.0	31	6.0	47
36	•	**WARNER COMMUNICATIONS** New York	Video production, videocassettes	673.5	15.6	4,206.1	109	16.0	16
37	33	**FMC** Chicago	Armored cars, electronics, chemicals	647.3	5.6	3,286.9	136	19.7	10
38	47	**DEERE** Moline, Ill.	Farm and industrial equipment	622.0	61.6	5,364.8	87	11.6	30
39	36	**ROCKWELL INT'L** El Segundo, Calif.	Electronics, automotive parts	620.0	23.3	11,946.3	28	5.2	48
40	37	**MERCK** Rahway, N.J.	Drugs, specialty chemicals	619.4	25.9	5,939.5	74	10.4	34
41	•	**COMPAQ COMPUTER** Houston	Computers and related equipment	611.7	101.9	2,065.6	202	29.6	3
42	34	**HONEYWELL** Minneapolis	Control and flight systems	610.0	5.0	7,148.3	60	8.5	38
43	•	**ALUMINUM CO. OF AMERICA** Pittsburgh	Aluminum products	590.6	75.1	9,795.3	40	6.0	46
44	•	**NORTH AMERICAN PHILIPS** New York	Electronics, televisions, lighting	588.1	26.4	5,423.5	84	10.8	32
45	39	**DRESSER INDUSTRIES** Dallas	Oil, coal, and gas equipment	584.6	23.0	3,941.7	118	14.8	22
46	38	**AMOCO** Chicago	Chemicals	578.0	17.5	21,150.0	12	2.7	49
47	48	**COMBUSTION ENGINEERING** Stamford, Conn.	Industrial control systems, generators	560.0	46.0	3,483.9	131	16.1	15
48	•	**ABBOTT LABORATORIES** Abbott Park, Ill.	Drugs, diagnostic equipment	547.0	36.1	4,937.0	94	11.1	31
49	49	**ETHYL** Richmond	Specialty and petroleum chemicals	542.7	47.6	2,718.0	158	20.0	9
50	•	**BAXTER INTERNATIONAL** Deerfield, Ill.	Health goods	521.0	44.3	6,861.0	64	7.6	42
		TOTALS		96,615.3		885,485.4			

LETTERS TO FORTUNE

DEALING WITH THE MEDIA

Seems to me another item needs to be added to the "Fourteen Ways to Deal With the Press" ("Smart Ways to Handle the Press," June 19): Know how to say what you want to say. Otherwise CEOs should take the advice of *60 Minutes*' Don Hewitt and stick to watching TV, not appearing on it.

I recently completed a nationwide survey of chief executives and found that most CEOs are not very good at public speaking. In fact, 89% said that the ability to speak effectively was very important, but only 6% claimed to be really good at it.

FRED BERGENDORFF
Professor
College of Professional Studies and Fine Arts
San Diego State University

Your advice to cage your lawyers miscasts the essence of an important point and maligns the lawyer's role. Better advice would have been: Weigh the communications risks yourself. Though legal advice is appropriate for the evaluation of legal risks in PR, it is the executive's role to weigh those risks against other factors. Advice from counsel tends to be conservative, but it does not "always" recommend silence as your article glibly asserts.

RALPH D. DAVIS
Lecturer in marketing and law
Illinois Institute of Technology
Chicago

The article brought back fond memories of some valuable guidance that an Air Force four-star general used to give in "Rules of Survival for Senior Staff Officers":

Rule 1. Proofread every staff paper you author as though your document is going to appear on the front page of the Washington *Post*.

Rule 2. Read the Washington *Post*.

PAUL BROWN
Colonel, USAF, Retired
Manager, Govt. Contracts, Miller Fluid Power
Bensenville, Illinois

Reporters make errors, but the words "I'm sorry" or "We made a bad mistake" seem to be missing from the standard vocabulary at schools of journalism.

MAURICE B. HICKEY
Spokane

RESTORING THE INCENTIVE

In "Seeking the Sense in CEO Pay" (June 5), Graef S. Crystal questioned the wisdom of Northrop's board adjusting the stock options price for CEO Thomas V. Jones. Options were granted to Jones and 13 other senior executives as incentive for them to remain with the company

LUC NOVOVITCH—GAMMA/LIAISON

"Most CEOs are not very good at public speaking. In fact, only 6% claimed to be really good at it."

beyond their normal retirement age at a particularly important period. By recognizing that the options had lost their incentive value and reissuing them at current values, we were able to put them to work once again in the long-term interest of our customers and shareholders.

The cycle time from investment to return on aerospace programs initiated by the government is often five to ten years; for a company-originated development it can be ten to 15 years, and if the underlying research and experimentation are included, the period frequently exceeds 25 years. While salary and incentive compensation are essentially tied to the executive marketplace and the achievement of specified annual objectives, realistic stock options help to span that lengthy period.

RICHARD E. HORNER
Chairman, Compensation Committee
Board of Directors, Northrop Corp.
Lake San Marcos, California

SAME TEETH, DIFFERENT HAIRDO

It's true but incomplete to say that marketers target teens and younger consumers for predictable sales growth ("The ABC's of Marketing to Kids," May 8). As you cited, 62% of college students buy the same brand of toothpaste they used in high school. The story is different, however, in other products: For example, 66% switched brands of shampoo.

CHIP UNDERHILL
Director, Corporate Communications
MarketSource Corp.
Cranbury, New Jersey

DEFENDING DRUCKER

It is Paul Johnson's review of Peter Drucker's *The New Realities* (Books & Ideas, June 19) that misses the mark, not Drucker. For decades Drucker has been the world's foremost observer of management. His writings are designed to make us think and to argue with him intellectually. The fact that he "incites one to refute his . . . assertions" is not accidental. But by accepting his assertions, one's mind (unlike Johnson's) is opened to new possibilities.

THOMAS R. HORTON
CEO, American Management Association
New York City

THE JAPAN SHUTTLE?

"Should Airlines Be Reregulated?" (June 19) missed the most obvious opportunity for improving the lot of beleaguered travelers—more deregulation. Think how quality of service would improve and prices drop if Japan Airlines, Lufthansa, and Singapore Airlines were allowed to fly domestic routes within the U.S. It's time our friends at Northwest and American Airlines were treated to the fresh breeze of international competition at home that we in the automotive industry have been enjoying.

W. JEFFREY HITCHCOCK
Bloomfield Hills, Michigan

FULL FEES FOR FULL SERVICE

With regard to full-service brokerage fees (Personal Investing, June 19), if Ellen Schultz could observe for one day the number of calls I receive on four incoming lines about my accounts, she would probably say, "Raise the fees." Investors want their assets watched. The last thing they need is a low-paid order taker.

MARSHALL C. SALE
Beverly Hills

A JURY OF HIS PEERS

Walter Kiechel III was right on target when he urged that a manager's performance review should include the opinions of people who work for him (Office Hours, June 19). At Arthur D. Little we have begun suggesting to our clients that they go one step further: Solicit comments from the manager's peers and counterparts in other units of the company with whom the manager interacts. Many of our clients have eliminated several levels of hierarchy. Getting things done means being able to function as effectively across the pyramid as up and down it.

ROBERT M. TOMASKO
Consultant to Arthur D. Little
Washington

FIRST TEXAS GIBRALTAR

In "The Screwiest S&L Bailout Ever" (June 19), you imply that I possessed options to purchase the common stock of Affiliated Computer Systems Inc. at the time that company purchased certain data-processing and related assets from Gibraltar Savings Association. This was not the case.

J. LIVINGSTON KOSBERG
Houston

CORRECTION

In the FORTUNE *Service 500 (June 5), net investment income of Allstate Life was shown in parentheses. It was, in fact, income, not loss.* F

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